

NATIONAL REPORT OF SWEDEN

Executive summary

This report gives a summary of the main activities within the Swedish Hydrographic Office since the last report given at the 63rd NHC meeting in Helsinki, FINLAND in April 2019.

1. Hydrographic Office

The Swedish Hydrographic Office is organized within the Swedish Maritime Administration (SMA). Apart from hydrography, SMA is also responsible for other maritime services, where the main are Pilotage, Fairway Service, Icebreaking, Search and Rescue (SAR) and Maritime Traffic Information.

At the time of compiling this report the Hydrographic Office, including the hydrographic survey personnel, employs 115 persons. See also the organisation scheme in figure 1.

All operations are certified in accordance with ISO 9001 and the environmental standard ISO 14001. The quality management system covers all parts of the operations and supporting activities within the Swedish Maritime Administration.

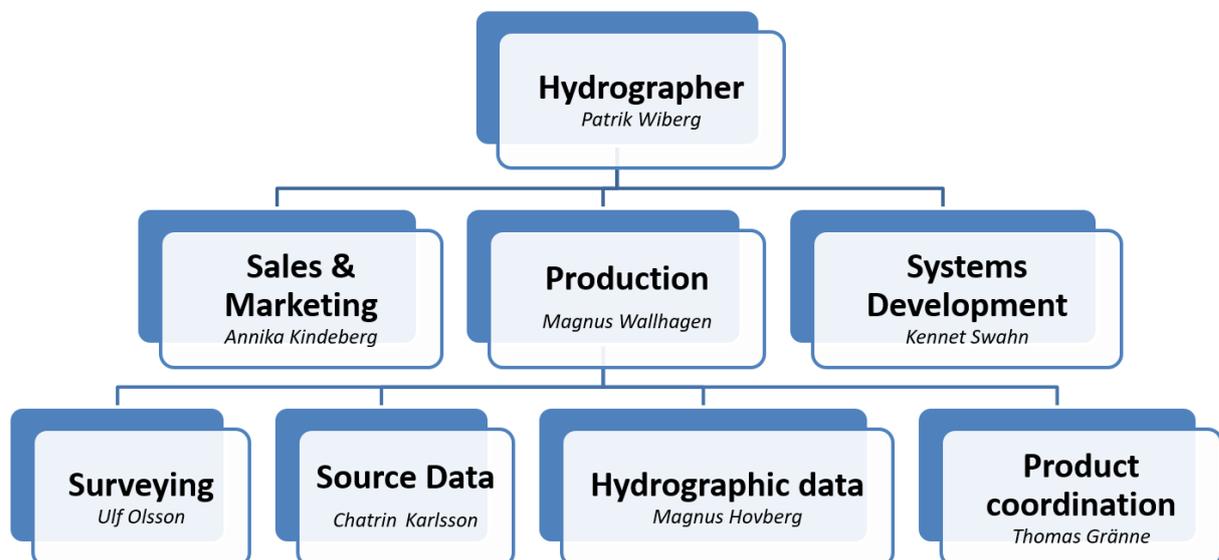


Figure 1 Organizational scheme of the Swedish Hydrographic Office

2. Surveys

2.1 Overall status and surveys 2019

Most Swedish waters are surveyed to some degree over the years, but the long term objective is that all Swedish waters should be surveyed in accordance with the IHO S-44

standard. Sweden and Finland have implemented a common Finnish Swedish realisation of S-44; named FSIS-44. There are still areas used by SOLAS vessels that needs to be surveyed by modern methods.

Surveys and re-surveys now and until 2022 are focused on shipping routes as defined as HELCOM Cat I and II areas in the HELCOM Re-Survey plan for the Baltic Sea. Cat I and II encompasses 118 000 km² out of totally 165 000 km² within Swedish waters. Sweden has targeted that the surveying of Cat I and II areas should be finalized 2020, but it is more likely that it will be finalized 2022, due to decreased co-financing from EU-programmes the latest years.

Since 2011 the Swedish HO, together with other Baltic Sea HOs, has received co-financing from the EU TEN-T and Connecting Europe Facility (CEF) programme for hydrographic surveying activities. The first phase FAMOS Freja was finalized 2016 and the second phase FAMOS Odin was finalized 30 June 2019. The HOs from Denmark, Estonia, Finland, Germany, Latvia, Lithuania and Sweden participated in FAMOS Odin. In addition to these HOs, there were also many other additional partners such as national authorities and institutes. A third phase of FAMOS was planned, but in late 2019, it became obvious that there are no prospects of getting co-financing from the CEF-programme for such actions in the near future, so a third phase of FAMOS is postponed.



In 2019 a total amount of 5 200 km² was surveyed in Swedish waters by SMA. The table below summarize the total amount of Swedish waters, surveyed in accordance with FSIS-44.

Category of SE waters	Area	FSIS-44 fulfilled	Percentage FSIS-44 fulfilled
Total area SE waters	165 000 km ²	112 100 km ²	68 %
Shipping routes HELCOM Cat I and II	118 000 km ²	101 500 km ²	86 %
Other waters HELCOM Cat III + inland waters	47 000 km ²	10 600 km ²	23 %

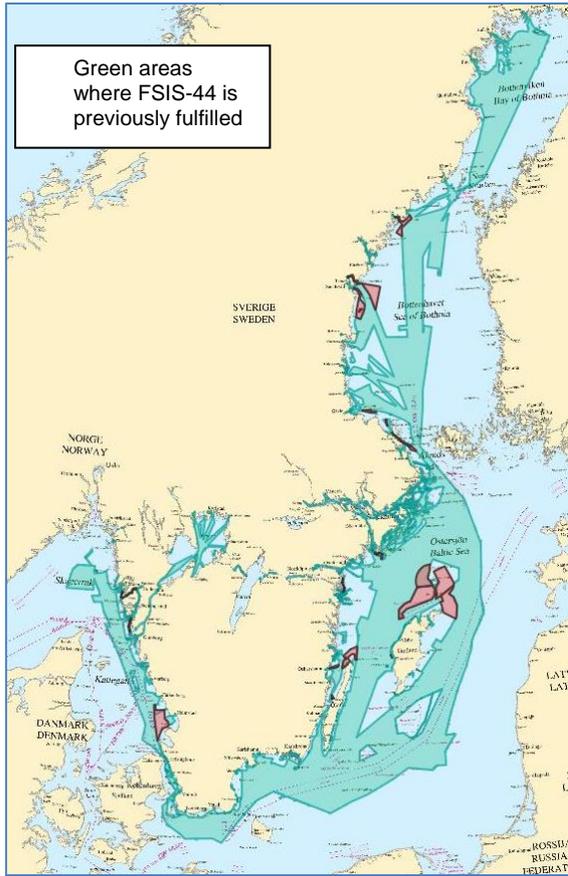


Figure 2 Surveys performed 2019



Surveys planned 2020

2.2 Survey Vessels



Figure 3- SMA Survey vessels equipped with multibeam. To the left the two survey vessels Jacob Hägg and Baltica where surveying is performed 24 hours per day and 7 days per week, weather permitted.

To the right the two survey boats Petter Gedda and Anders Bure.



Figure 4 Bar sweeping survey vessel Gustaf af Klint. The bar is transverse across the stern and is here submerged into the water.

2.3 Depth Database

The depth database DIS (Depth Information System) is managed in an ESRI-system with some specialized tools developed by a Swedish GIS company specialized on ESRI tools. 10 March 2020 there were 240 976 562 273 (241 billion) depths stored in the depth database.

3. New charts and updates

3.1 New ENC and Paper Charts

The Swedish paper chart portfolio consists of 117 paper charts and 16 series of small craft charts. Special charts, tailored to the customer are also available as well as a service to provide S-57 or raster data to end user service providers. To provide the manufacturers, delivering electronic charts for the leisure market, the PRIMAR service “GeoView” is used.

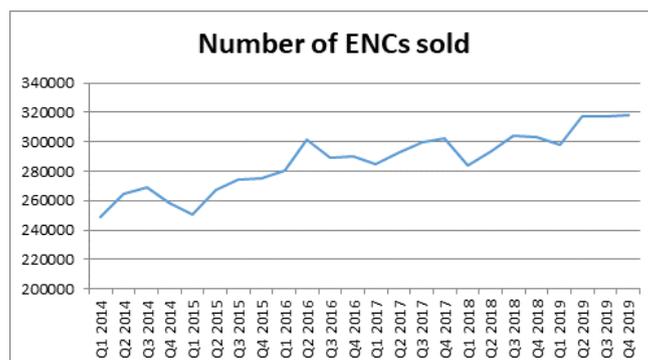
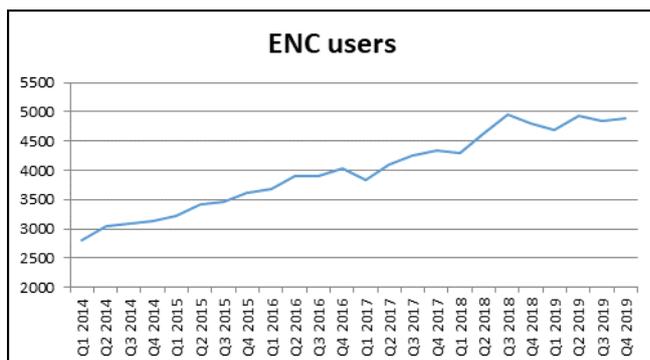
At the SMA website under the headline “Se på sjökort” a chart index showing Swedish charts is available at: <https://geokatalog.sjofartsverket.se/kartvisarefyren/>

Under the headline “Djupinformationens kvalitet” the quality of depth data is presented: <https://geokatalog.sjofartsverket.se/kartvisarefyren/>

33 New Editions (NE) of paper charts were published 2019.

1045 New Editions (EN) and 877 Revisions (ER) of ENCs were published 2019. In 2019 the amended Swedish maritime limits and boundaries were included in SE ENCs which explains the large amount of published EN this year.

The tables below report the sales of Swedish ENCs for the last five years.



Usage Band	Compilation Scale	No of SE ENCs
2 General	1:350 000 – 1:4 999 999	11
3 Coastal	1:90 000 – 1:349 999	81
4 Approach	1:22 000 – 1:89 999	230
5 Harbour	1:4 000 – 1:21 999	153
6 Berthing	>1:4 000	105
		580 , total number of SE ENCs

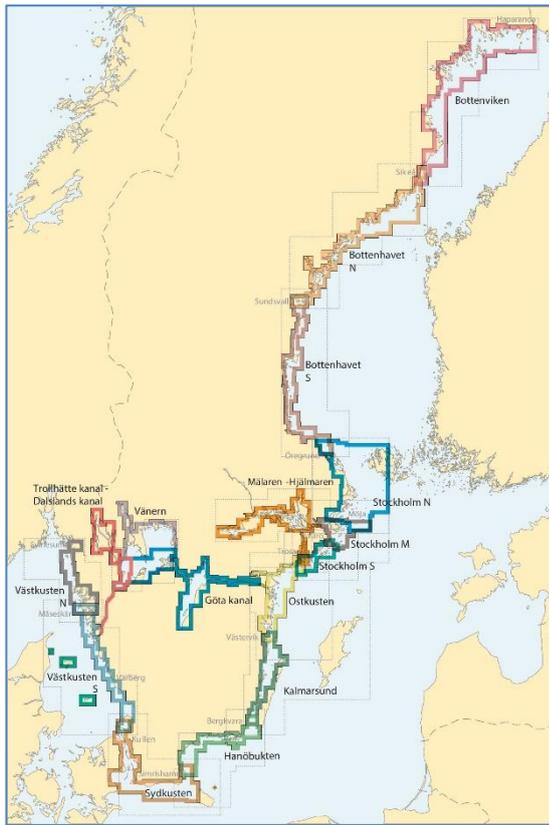
3.2 The Chart Improvement project – Sjökartsløftet

Within the BSHC it has been agreed upon that all chart products within the Baltic Sea should be adjusted to a common vertical reference level; Baltic Sea Chart Datum 2000. As part of the commitment made in BSHC the SMA started the Chart Improvement project (Sjökartsløftet) 2015 in order to adjust the chart products to this new reference level. Apart from amending existing depth contours and depth figures, other quality improvements will be made at the same time such as:

- New surveyed coastline, from the Swedish land survey agency (Lantmäteriet), will be implemented
- Navigational aids will be adjusted to geodetically surveyed positions
- 15 and 30 m depth contours will be included as standard depth contours

The new vertical reference level will be implemented in all Swedish chart products (117 paper charts and 580 ENCs). There are some challenges with the timeline for the project due to lack of resources. The project is expected to be finalized 2024. In late 2019 the geographical area from the SE – FI border to Söderhamn, in southern Sea of Bothnia and some charts in Stockholm archipelago is finalized. The new surveyed coastline is updated beforehand and is implemented in most of the SE ENCs and paper charts.

3.3 Small Craft Charts



The sales of Swedish small craft charts is very important for the SMA net result. In 2019 five New Editions of small craft charts were published covering Ostskusten, Kalmarsund, Bottenhavet N, Bottenhavet S and the inland waters Trollhätte and Dalsländs kanal. The two series in Sea of Bothnia were produced with Baltic Sea Chart Datum 2000.

Figure 5 Small craft chart series in Sweden

4. New publications and updates

4.1 NtM and other publications

The Swedish Notices to Mariners (Ufs) are available on the SMA web site:

- A daily updated database in which NtM information can be searched in many different ways, e.g. all notices published for a certain given area and published during a given period time period. See <http://www.sjofartsverket.se/en/Maritime-services/Hydrographic-Information/NtM---Notices-to-mariners/Search-the-database/>
- Each week one Swedish and one English PDF-file are published on the website www.sjofartsverket.se/ufs and www.sjofartsverket.se/ntm respectively.
- General nautical information (about MSI, regulations, ENC and paper charts, fairway information, etc.) needed for safe navigation in Swedish waters is available in Ufs A. It is published as a pdf version available both in Swedish and in English at the SMA website. The link to the English version is https://www.sjofartsverket.se/upload/Ufs/Ufs_A_en.pdf. It is easy to print the pdf version for the customers. The ambition is to update the information at least once per year.

The Swedish Chart Catalogue is published yearly. It is available as a printed version as well as published at the SMA website. See <http://www.sjofartsverket.se/upload/Pdf-Gemensamma/Sj%C3%B6kortskatalog%202019.pdf>

4.2 Swedish Pilot

Swedish pilot books in paper format have not been produced in several years. Critical nautical information, traditionally published in the pilot books, has been published at the respective SMA Pilot Area's website. To secure more harmonized nautical information and utilize for harbours to more easily contribute, a web service called Svensk Lots/Swedish Pilot is under development.

5. MSI

All Swedish navigational warnings are drafted and broadcasted by the station **SWEDEN Traffic**. This station also performs the NAVTEX broadcasting of MSI for the entire Baltic Sea with exception of area "U", which is covered by Tallinn Radio.

The station is operated H24 all days of the year. Contact information: Tel: +46 771 63 06 85

E-mail: swedentraffic@sjofartsverket.se

The NtM section of the Hydrographic Office maintains the role "Baltic Sea Sub-area Coordinator", including the role of international coordinator of MSI in the Baltic Sea area.

6. C-55

The latest update regarding Sweden in the C-55 database was delivered to the IHO Secretariat in March 2020.

7. Capacity building

Sweden has not been active in the area of capacity building during the period.

8. Oceanographic activities

8.1 Tide gauge network

The SMA is responsible for a number of water level stations but it is the Swedish Meteorological and Hydrological Institute (SMHI) that has the main responsibility for the Swedish oceanographic activities. The SMA and the SMHI have a close cooperation on water level information. The network has been modernized through extra financing from the FAMOS Odin project. From 3 June 2019 all water level information from SMHI and SMA is presented in Baltic Sea Chart Datum 2000 instead of Mean Sea Level.

Other oceanographic actors are the Swedish Geological Survey, universities and research institutes.

8.2 Seabed 2030 – RDACC in Stockholm

The GEBCO Seabed 2030 project will facilitate mapping of the ocean floor by the year 2030. The Nippon Foundation will contribute US\$ 18.5 million for the first ten years of the project. The aspiration is for Seabed 2030 to compile all available and newly collected bathymetric data into a high quality, high resolution digital model of the ocean floor and to promote international efforts to collect new data. This will be performed by four Regional Data Assembly and Coordination Centres (RDACCs) and a Global Data Assembly and

Coordination Centre (GDACC). One of the RDACCs is the Department of Geological Sciences, Stockholm University, Sweden, which is responsible for the North Pacific and Arctic Ocean.

9. Marine Spatial Data Infrastructure in Sweden

Marine data is used by many different stakeholders in Sweden. Apart from navigation it is crucial for many different purposes such as marine environmental mapping, flooding prediction (climate change related) and marine spatial planning. In Sweden there is no specific initiative to establish a geodata portal only for marine data. The Swedish Land Survey Agency – Lantmäteriet – is the coordinator for all geodata in Sweden including marine data. At www.geodata.se marine spatial data is available together with all other geodata.

The Swedish Agency for Marine and Water Management has an overall responsibility for Marine Spatial Planning in Sweden, but the coastal municipalities are responsible for their waters from one nautical mile outside the limit of baseline to the shoreline. For Marine Spatial Planning specifically the municipalities have expressed that the lack of marine data in the coastal region is problematic and hinder them to perform their planning.

10. Innovation

11. Other activities

11.1 Category B Hydrographic Surveyors Program established in Sweden

The SMA has been involved in the establishment of a Category B Hydrographic Surveyors Program in Sweden. This Cat B program has been certified by the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC). The University of Gothenburg is overall responsible for the program, but to be able to deliver the program a consortium of academia, industry and government organizations has been established. This is the first certified Hydrographic Surveyors program established in any of the Nordic countries. As head of the program, the well-known hydrographic expert David Dodd has been recruited by the University of Gothenburg. Preparations are also ongoing for the establishment of a Hydrographic Surveyors Cat A program. The first Cat B course started in Gothenburg 6 November 2018 and the first students were examined 22 March 2019. The second Cat B course is ongoing from November 2019 – March 2020. Students from other Nordic countries are of course welcome.